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EXAMINER	
LAVARIAS, ARNEL C	

ART UNIT	PAPER NUMBER
2872	

DATE MAILED: 03/04/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/646,291	BERMAN, ARTHUR	
	Examiner	Art Unit	
	Arnel C. Lavarias	2872	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12/13/04,1/5/04,8/22/03*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-70* is/are pending in the application.

4a) Of the above claim(s) *1,2,13-15,19,21-30,32-37,43,44,46-48 and 55-70* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *3,4,8-11,16-18,20,31,38-42,45 and 49-54* is/are rejected.

7)☒ Claim(s) *5-7 and 12* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *22 August 2003* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *1/5/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election of Group I, Species 2, in the reply filed on 12/13/04 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

2. Claims 1-2, 13-15, 19, 21-30, 32-37, 43-44, 46-48, 55-70 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected inventions and species, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 12/13/04.

Priority

3. Applicant has not complied with one or more conditions for receiving the benefit of an earlier filing date under 35 U.S.C. 119(e) as follows:

An application in which the benefits of an earlier application are desired must contain a specific reference to the prior application(s) in the first sentence(s) of the specification or in an application data sheet by identifying the prior application by application number (37 CFR 1.78(a)(2) and (a)(5)). If the prior application is a non-provisional application, the specific reference must also include the relationship (i.e., continuation, divisional, or continuation-in-part) between the applications except when the reference is to a prior application of a CPA assigned the same application number.

Drawings

4. The drawings were received on 8/22/03. These drawings are objected to for the following reason(s) as set forth below.

5. The drawings are objected to because of the following informalities:

Figure 1A- the reference label 'Assemby + Kennel' below 'Prism' should read 'Assembly + Kernel'.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

6. The disclosure is objected to because of the following informalities:

Page 5, line 10- 'LCoS' has not been previously defined. The full, unabbreviated word or phrase must be included the first time an abbreviation is used.

Page 5, line 21- 'green' should read 'blue'

Page 7, line 8- '1A' should read '1B'

Page 8, lines 5, 6, 7, 10- all instances of 'blue' should read 'red'

Page 8, lines 6, 9, 10, 11- all instances of 'red' should read 'blue'

Page 12, line 5- 'polarizatrion' should read 'polarization'

Page 13, line 21- U.S. provisional patent application number is missing

Page 16, line 10- 'consider' should read 'considered'

Appropriate correction is required.

7. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required:

Claim 9 recites the limitation that '... the processing beam splitter comprises a cholesteric based beam splitter comprising at least one cholesteric layer', which is not disclosed in the specification or drawings of the disclosure.

Claim 20 recites the limitation that the prism assembly further include '... a polarization sensitive microdisplay mounted on each of the processing faces of the cholesteric based beam splitter'. It is noted that this is in addition to the previously provided processing devices/microdisplays that are already on the processing faces, as set forth in Claims 16

and 17. The specification and drawings of the disclosure does not disclose the processing faces of the processing and cholesteric based beam splitters having more than a single display on each processing face.

Claim 50 recites the limitation that the dual layer cholesteric includes one of blue/green cholesterics and red/green cholesterics. The specification and drawings of the disclosure fail to disclose this limitation, and instead only states that the dual layer cholesteric is one of a blue/red cholesteric.

Claim 54 recites the limitation that '... the display device is a television'. The specification and drawings of the disclosure fail to disclose this limitation.

Double Patenting

8. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington,* 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

9. Claims 42, 45, 49-54 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over Claims 1-67 of copending Application No. 10/816,996 (U.S. Patent Application Publication US 2005/0041289A1).

Although the conflicting claims are not identical, they are not patentably distinct from each other because copending Application No. 10/816,996 (U.S. Patent Application Publication US 2005/0041289A1) similarly claims a prism assembly (See for example Claims 15, 33) comprising at least one beam splitting component comprising at least one cholesteric layer, the cholesteric layer being or comprising a dual layer cholesteric (See for example Claims 19-21, 37, 41); the dual layer cholesteric comprising one of blue/red cholesterics, blue/green cholesterics, and red/green cholesterics (See Claims 19-21, 38, 41-43); the cholesteric layers being sensitive to different light polarizations, such as one of the cholesteric layers being sensitive to right hand circularly polarized light and the other cholesteric layer being sensitive to left hand circularly polarized light (See for example Claim 38, 41-43). Copending Application No. 10/816,996 (U.S. Patent Application Publication US 2005/0041289A1) additionally similarly claims a display device comprising a prism assembly having at least one cholesteric layer, the display device being a television (See for example Claims 66-67).

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 102

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

11. Claims 42, 53-54 are rejected under 35 U.S.C. 102(b) as being anticipated by Wortel (U.S. Patent No. 5820241).

Wortel discloses a prism assembly and a display device comprising the prism assembly, the prism assembly having at least one beam splitting component comprising at least one cholesteric layer, and the display device being a television (See for example Figures 1, 5; col. 5, lines 5-45).

12. Claim 31 is rejected under 35 U.S.C. 102(b) as being anticipated by Nakanishi et al. (U.S. Patent No. 6183090).

Nakanishi et al. discloses a prism assembly (See for example Figure 4B), comprising an input beam splitter (See for example 4-G in Figure 4B) having a first output and a second output; a first component beam splitter (See for example 3 in Figure 4B) coupled to the first output of the input beam splitter; a second component beam splitter (See for example 3 in Figure 4B) coupled to the second output of the input beam splitter; and an output beam splitter (See for example 10 in Figure 4B) coupled to an output of the first component beam splitter and an output of the second component beam splitter; wherein at least one of the first component and second component beam splitters is a cholesteric based beam splitter (See 3 in Figure 4B; col. 8, line 40-col. 10, line 63). Nakanishi et al. further discloses the input beam splitter being configured to divide a light beam entering the first input of the input beam splitter into a first light beam that exits the first output of the input beam splitter and a second light beam that exits the second output of the input beam splitter; both the cholesteric based beam splitter and processing beam splitter

comprising a beam splitting component with at least one cholesteric layer (See 3 in Figure 4B; col. 8, line 40-col. 10, line 63); and the prism assembly further including processing devices, such as polarization sensitive microdisplays and polarizing filters, on the inputs or outputs of the processing beam splitter and cholesteric based beam splitter (See for example 8, 5-G, 5-R in Figure 4B).

Claim Rejections - 35 USC § 103

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

14. Claims 45, 49-52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wortel in view of Schadt et al. (M. Schadt, J. Fünfschilling, 'New liquid crystal polarized color projection principle', Jap. J. Appl. Phys., vol. 29, no. 10, Oct. 1990, pp. 1974-1984.).

Wortel discloses the invention as set forth above in Claim 42, except for the cholesteric layer being/comprising a dual cholesteric layer, the dual layer cholesteric comprising one of blue/red, blue/green, and red/green cholesterics, and one of the cholesteric layers is sensitive to right hand circularly polarized light and the other cholesteric layer is sensitive to left hand circularly polarized light. However, Schadt et al. teaches the general concept of utilizing such single and multiple layer cholesterics-based filters for use in LCD projection and television applications (See for example

Sections 1-2). In particular, Schadt et al. teaches that conventional cholesteric layers having different wavelength and polarization properties and used as filters may be combined or stacked serially to enhance the operational wavelength of the set of filters. For example, Schadt et al. provides an example of combining three such cholesteric layers to increase filtering capability, particularly in the red, blue and green portion of the wavelength range and including right handed and left handed circularly polarization (See for example Section 2; Figures 4-6). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have the cholesteric layer be/comprise a dual cholesteric layer, the dual layer cholesteric comprising one of blue/red, blue/green, and red/green cholesterics, and one of the cholesteric layers is sensitive to right hand circularly polarized light and the other cholesteric layer is sensitive to left hand circularly polarized light, as taught by Schadt et al., in the prism assembly of Wortel, for the purpose of increasing the limited bandwidth of reflected/transmitted polarized light, thus increasing the light throughput and filter efficiency.

15. Claims 3-4, 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakanishi et al. in view of Faris (U.S. Patent No. 6563553).

Nakanishi et al. discloses a prism assembly (See for example Figure 4B), comprising an input beam splitter (See for example 4-G in Figure 4B) having a first input, a first output, and a second output; a processing beam splitter (See for example 3 in Figure 4B) having a first input and a first output, wherein the first input of the processing beam splitter is coupled to the first output of the input beam splitter; a cholesteric based beam splitter (See for example 3 in Figure 4B) having a first input and a first output, wherein

the first input of the cholesteric based beam splitter is coupled to the second output of the input beam splitter; and an output beam splitter (See for example 10 in Figure 4B) having a first input face, a second input face, and a first output face, wherein the first input face of the output beam splitter is coupled to the first output of the processing beam splitter and the second input face of the output beam splitter is coupled to the first output of the cholesteric beam splitter. Nakanishi et al. further discloses the input beam splitter being configured to divide a light beam entering the first input of the input beam splitter into a first light beam that exits the first output of the input beam splitter and a second light beam that exits the second output of the input beam splitter; both the cholesteric based beam splitter and processing beam splitter comprising a beam splitting component with at least one cholesteric layer (See 3 in Figure 4B; col. 8, line 40-col. 10, line 63); and the prism assembly further including processing devices, such as polarization sensitive microdisplays and polarizing filters, on the inputs or outputs of the processing beam splitter and cholesteric based beam splitter (See for example 8, 5-G, 5-R in Figure 4B). Nakanishi et al. does not specifically disclose the input, processing, and cholesteric based beam splitters having input and output faces, such as in prism-based splitters. However, beam splitters in the form of prism beam splitters are well known in the art. For example, Faris teaches a flat panel display system (See for example Figures 1-5), wherein the various beam splitters used to split and route the incident light are prism-based beam splitters in the shape of cubes (See for example beam splitters including element 60 in Figures 1-5), and thus having faces to route light into and out of the beam splitting surface of the beam splitters. Therefore, it would have been obvious to one having

ordinary skill in the art at the time the invention was made to have the input, processing, and cholesteric based beam splitters have input and output faces, such as in prism-based splitters, as taught by Faris, in the prism assembly of Nakanishi et al., for the purpose of providing rigidity to the various splitting surfaces, while simplifying alignment within the optical system.

16. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nakanishi et al. in view of Faris.

Nakanishi et al. in view of Faris discloses the invention as set forth above in Claim 3, except for the cholesteric based beam splitter comprising a beam splitting component comprising two cholesteric layers. However, Faris additionally discloses that the cholesteric beam splitting elements may further include, instead of a single layer, a plurality of cholesteric layers (See col. 8, lines 26-56). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have the cholesteric based beam splitter comprise a beam splitting component comprising two cholesteric layers, as further taught by Faris, in the prism assembly of Nakanishi et al. in view of Faris, for the purpose of extending the reflection and transmission wavelength characteristics of the circularly polarized light to cover additional bands of wavelengths, such as blue, green or red wavelengths, thus allowing for full color operation of the prism assembly.

17. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nakanishi et al. in view of Faris.

Nakanishi et al. in view of Faris discloses the invention as set forth above in Claims 3, 10, except for the cholesteric based beam splitter comprising 2 prisms generally abutted at diagonals of the prisms and the cholesteric layers are disposed on at least one diagonal of the prisms. However, Faris further discloses that the cholesteric beam splitting elements may be of the form where the cholesteric layer is formed on one of the long diagonals of a cube beam splitter (See for example 60 in Figures 1-5). It would also have been evident and known to one having ordinary skill in the art that the use of a pair of right angle prisms would facilitate the manufacture of such a beam splitting element, wherein the cholesteric layer is provided on the hypotenuse of one of the right angle prisms, and the two hypotenuses being abutted to each other. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made for the cholesteric based beam splitter to comprise 2 prisms generally abutted at diagonals of the prisms and the cholesteric layers are disposed on at least one diagonal of the prisms, as further taught by Faris, in the prism assembly of Nakanishi et al. in view of Faris, to simplify manufacturing of the beam splitter and take advantage of well, known existing manufacturing methods.

18. Claims 16-18, 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakanishi et al. in view of Faris as applied to Claim 3 above, and further in view of Johnson et al. (U.S. Patent No. 6183091).

Nakanishi et al. in view of Faris discloses the invention as set forth above in Claim 3, except for the processing devices being directly mounted onto the processing faces, and the processing devices being three microdisplays. However, Johnson et al. teaches a

conventional color imaging system utilizing multiple beam splitting prisms (See for example Figure 1), wherein a plural reflective liquid crystal displays, e.g. three corresponding to red, green and blue images, are attached to various faces of two of the beam splitting prisms (See for example 122, 130, 132 in Figure 1). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have the processing devices be directly mounted onto the processing faces, and the processing devices being three microdisplays, as taught by Johnson et al., in the prism assembly of Nakanishi et al. in view of Faris, for the purpose of 1) providing full color display and imaging (i.e. including red, blue, and green) from the prism assembly, and 2) reducing the size of the prism assembly.

19. Claim 38 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nakanishi et al. in view of Faris.

Nakanishi et al. discloses the invention as set forth above in Claim 31, except for the cholesteric based beam splitter comprising a beam splitter having a dual cholesteric layer. However, Faris teaches a flat panel display system (See for example Figures 1-5), wherein the various beam splitters used to split and route the incident light are prism-based beam splitters in the shape of cubes (See for example beam splitters including element 60 in Figures 1-5), and thus having faces to route light into and out of the beam splitting surface of the beam splitters. Faris additionally discloses that the cholesteric beam splitting elements may further include, instead of a single layer, a plurality of cholesteric layers (See col. 8, lines 26-56), such as a dual layer cholesteric layer. Therefore, it would have been obvious to one having ordinary skill in the art at the time

the invention was made to have the cholesteric based beam splitter comprise a beam splitter having a dual cholesteric layer, as taught by Faris, in the prism assembly of Nakanishi et al., for the purpose of extending the reflection and transmission wavelength characteristics of the circularly polarized light to cover additional bands of wavelengths, such as blue, green or red wavelengths, thus allowing for full color operation of the prism assembly.

20. Claims 39-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakanishi et al. in view of Faris as applied to Claims 31, 38 above, and further in view of Schadt et al.

Nakanishi et al. in view of Faris discloses the invention as set forth above in Claims 31, 38, except for the dual layer cholesteric comprising a first color cholesteric layer having a first polarization and a second color cholesteric having a second polarization, the two polarizations opposite to each other, such as right hand and left hand polarization. However, Schadt et al. teaches the general concept of utilizing such single and multiple layer cholesterics-based filters for use in LCD projection and television applications (See for example Sections 1-2). In particular, Schadt et al. teaches that conventional cholesteric layers having different wavelength and polarization properties and used as filters may be combined or stacked serially to enhance the operational wavelength of the set of filters. For example, Schadt et al. provides an example of combining three such cholesteric layers to increase filtering capability, particularly in the red, blue and green portion of the wavelength range and including right handed and left handed circularly polarization (See for example Section 2; Figures 4-6). Therefore, it would have been

obvious to one having ordinary skill in the art at the time the invention was made to have the dual layer cholesteric comprise a first color cholesteric layer having a first polarization and a second color cholesteric having a second polarization, the two polarizations opposite to each other, such as right hand and left hand polarization, as taught by Schadt et al., in the prism assembly of Wortel, for the purpose of increasing the limited bandwidth of reflected/transmitted polarized light, thus increasing the light throughput and filter efficiency.

Allowable Subject Matter

21. Claims 5-7, 12 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

22. The following is a statement of reasons for the indication of allowable subject matter:

Claim 5 is allowable over the cited art of record for at least the reason that the cited art of record fails to teach or reasonably suggest a prism assembly, as generally set forth above in Claim 3, the prism assembly including a dual cholesteric layer configured to direct a first part of a light beam entering the input face of the cholesteric based beam splitter to a first processing face of the cholesteric beam splitter, direct a second part of the light beam entering the input face of the cholesteric based beam splitter to a second processing face of the cholesteric beam splitter, and direct light beams emanating from the first and second processing faces to the exit face of the cholesteric based beam

splitter. Claims 6-7 are dependent on Claim 5, and hence are allowable for at least the same reasons Claim 5 is allowable.

Claim 12 is allowable over the cited art of record for at least the reason that the cited art of record fails to teach or reasonably suggest a prism assembly, as generally set forth above in Claims 3, 10, the cholesteric layers of the prism assembly further including a blue cholesteric for directing blue light to a first processing face of the cholesteric based beam splitter and a red cholesteric for directing red light to a second processing face of the cholesteric based beam splitter.

Conclusion

23. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Arnel C. Lavarias whose telephone number is 571-272-2315. The examiner can normally be reached on M-F 9:30 AM - 6 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew Dunn can be reached on 571-272-2312. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Arnel C. Lavarias
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Group Art Unit 2872
2/28/05